

# Flex I/O™ and Flex I/O XT™ Modules

In-Cabinet Modular I/O Platform

## Advantages

*Reduced Space:* Wire directly from sensor to terminal base and eliminate the terminal strip

*Functionality:* From two point to 32-point modules offer functions of larger rack-based I/O

*Increased Productivity:* Easy configuration and setup of I/O modules using wizards speeds engineering and installation

*Reduced Downtime:* Removal and Insertion Under Power (RIUP) and module level diagnostics

*Exceptional Choices:* More than 90 varieties and specialty modules meet the needs of a wide variety of applications

*Network Flexibility:* Communicates on EtherNet/IP, ControlNet, DeviceNet, Remote I/O and other open networks

*Improved Plant Operations:* HART analog modules pass through HART data to asset management software or controller for improved plant operations



FLEX I/O offers all the functions of larger rack-based I/O without the space requirements. Its cost effectiveness, flexibility, modularity, and reliability have made it the most popular distributed I/O platform with more than four million modules sold.

FLEX I/O helps eliminate multiple long wiring runs, reduces terminations, decreases engineering and installation costs and time, and substantially reduces down time. It complements all Rockwell Automation controller platforms for a distributed I/O solution.

The FLEX I/O system can communicate on EtherNet/IP™, ControlNet™, DeviceNet™, and many other open networks including, but not limited to, Remote I/O, PROFIBUS DP, and Interbus-S. You can independently select the I/O, termination style, and network to meet your application needs.

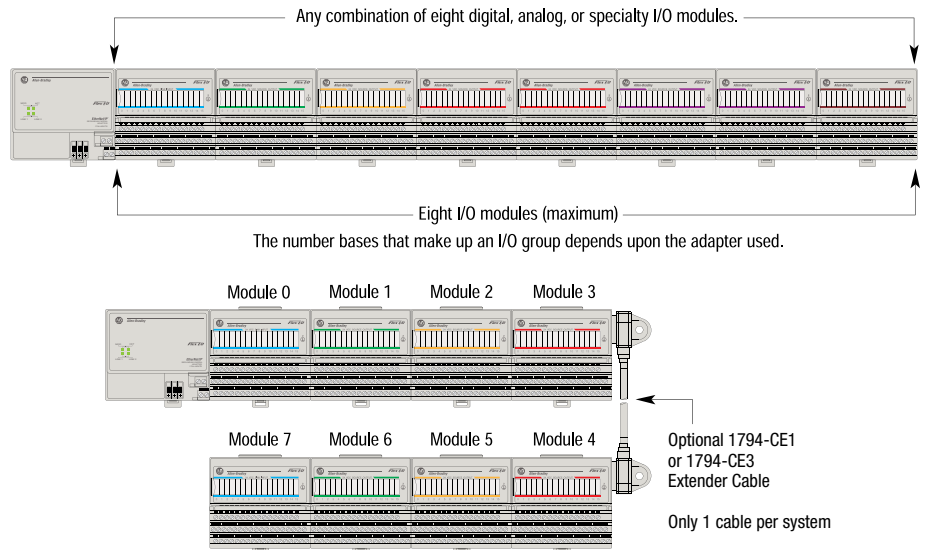
LISTEN.  
THINK.  
SOLVE.®

The FLEX I/O system contains a network adapter, terminal bases, and I/O modules. You can power the system with a FLEX power supply or any other compatible power source. You can use as many as eight terminal bases per adapter, allowing a wide variety of I/O channels per adapter, or mix and match digital, analog and specialty I/O modules to meet your specific needs. For instance,

- 256 digital inputs/outputs with 32-point modules
- 96 analog inputs

FLEX I/O can be mounted horizontally or vertically on standard 35mm DIN rail or panel mounted without derating. These modules also come in an XT version, which are conformally coated, and operate in extreme environments. These modules operate in a temperature range from -20C/-25C to 70C.

FLEX Ex™, an intrinsically safe line extension is also in the FLEX I/O family. FLEX Ex is designed to be distributed throughout hazardous areas without the use of bulky explosion proof or purged enclosures.



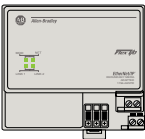
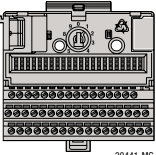
When using the optional extender cable, module groups are numbered sequentially along the length of the system.

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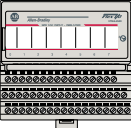
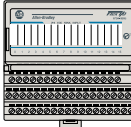
## FLEX I/O Products


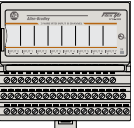
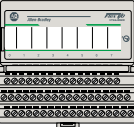
The following table lists the available FLEX I/O products.

General Specifications		Operating Temperature			
• FLEX I/O		0...55 °C (32...131 °F)			
• FLEX I/O-XT		-20/-25...70 °C (-4...185 °F)			
Storage Temperature		-40...85 °C (-40...185 °F)			
Relative Humidity		5...95% non-condensing			
Shock, Operating <sup>1</sup>		30 g peak acceleration, 11(±1) ms pulse width			
Shock, Non-Operating <sup>1</sup>		50 g peak acceleration, 11(±1) ms pulse width			
Vibration <sup>1</sup>		Tested 5 g @ 10...500 Hz per IEC 68-2-6			
		Dimensions (HxWxD), Approx.	Weight		
I/O Modules		46 x 94 x 53 mm (1.8 x 3.7 x 2.1 in)	0.1 kg (0.3 lb)		
I/O Adapters		87 x 68 x 69 mm (3.4 x 2.7 x 2.7 in)	0.2 kg (0.4 lb)		
Terminal Bases		94 x 94 x 69 mm (3.4 x 3.7 x 2.7 in)	0.2 kg (0.5 lb)		
Power Supplies	1794-PS13	87 x 68 x 69 mm (3.4 x 2.7 x 2.7 in)	0.2 kg (0.5 lb)		
	1794-PS3	87 x 94 x 69 mm (3.4 x 3.7 x 2.7 in)	0.4 kg (0.8 lb)		
The dimensions for 1794-AENT are 87 x 94 x 69 mm (3.4 x 3.7 x 2.7 in)					
1794-AENTR, 1794-ACN15, and 1794-ACNR15 adapters have the following dimensions: 87.4 x 94 x 92 mm (3.4 x 3.7 x 3.6 in)					
	Product	Catalog Number	Description		
<b>Communications Components</b>  	Adapter	1794-ACN15	24Vdc ControlNet Adapter		
		1794-ACNR15	24Vdc ControlNet Redundant Media Adapter		
		1794-ACNR15XT	24Vdc ControlNet Redundant Media Adapter, XTEMP (-20C to 70C)		
		1794-ADN	24Vdc DeviceNet Adapter		
		1794-AENT	24Vdc EtherNet I/P Adapter		
		1794-AENTR	24Vdc EtherNet I/P, 2-Port, Twisted-Pair Media		
		1794-AENTRXT	24Vdc EtherNet I/P, 2-Port, Twisted-Pair Media, XTEMP (-25C to 70C)		
		1794-APB	12Mbps PROFIBUS DP Adapter		
		1794-APBDV1	12Mbps PROFIBUS DP –V1 Adapter		
		1794-ASB	24Vdc Remote I/O Adapter (to 8 modules)		
		1794-ASB2	24Vdc Remote I/O Adapter (to 2 modules)		
		<b>Termination Styles</b>  	Terminal Base Units	1794-TB2	2-Wire Cage Clamp Terminal Base Unit
				1794-TB3 <sup>2</sup>	3-Wire Cage Clamp Terminal Base Unit
				1794-TB3S <sup>2</sup>	3-Wire Spring Clamp Terminal Base Unit
1794-TB32	32-Point Cage Clamp Terminal Base Unit				
1794-TB32S	32-Point Spring Clamp Terminal Base Unit				
1794-TB3T <sup>2</sup>	Terminal Base Unit				
1794-TB3TS <sup>2</sup>	Spring Clamp Temperature Terminal Base Unit				
1794-TB3G <sup>2</sup>	Cage Clamp Grounded Terminal Base Unit				
1794-TB3GS <sup>2</sup>	Spring Clamp Grounded Terminal Base Unit				
1794-TBN <sup>2</sup>	Terminal Base Unit (NEMA-style)				
1794-TBNF	Fused Terminal Base Unit (NEMA-style)				
1794-TBKD	Knifed Switch Disconnect Terminal Base Unit				
1794-TB37DS	37 Pin D-Shell Termination (digital & analog modules)				
1794-TB62DS	62 Pin D-Shell Termination (32pt. I/O modules)				

<sup>1</sup> To maintain these specifications, you must use DIN rail locks specifications, you must use DIN rail locks

<sup>2</sup> When product is marked. See specific module installation instructions for details

	Product	Catalog Number	Description	
<b>AC I/O</b>  	120Vac Modules	1794-IA8	120Vac 8 Input Module	
		1794-IA8I	120Vac 8 Isolated Input Module	
		1794-IA16	120Vac 16 Input Module	
		1794-OA8	120Vac Output Module	
		1794-OA8I	120Vac 8 Isolated Output Module	
		1794-OA16	120Vac 16 Output Module	
	220Vac Modules	1794-IM8	220Vac 8 Input Module	
		1794-IM16	220Vac 16 Input Module	
		1794-OM8	220Vac 8 Output Module	
		1794-OM16	220Vac 16 Output Module	
<b>DC I/O</b>  	5Vdc Modules	1794-IG16	5Vdc 16 TTL Input Module	
		1794-OG16	5Vdc 16 TTL Output Module	
	24Vdc Modules	1794-IB8	24Vdc 8 Sink Input Module	
		1794-IB10X0B6	24Vdc 10 Sink Input/6 2A Source Output Module	
		1794-IB10X0B6XT	24Vdc 10 Sink Input/6 2A Source Output Module, XTEMP (-20C to 70C)	
		1794-IB16	24Vdc 16 Sink Input Module	
		1794-IB16XT	24Vdc 16 Sink Input Module, XTEMP (-20C to 70C)	
		1794-IB16D	24Vdc 16 Sink Input Module, with Diagnostics	
		1794-IB16X0B16P	24Vdc Combo Module, 16 Sink Inputs/16 Source Outputs, Protected Module	
		1794-IB32	24Vdc 32 Sink Input Module	
		1794-IV16	24Vdc 16 Source Input Module	
		1794-IV32	24Vdc 32 Source Input Module	
		1794-OB8	24Vdc 8 Source Output Module	
		1794-OB8EP	24Vdc Electronically Fused 8 2A Output Module, Protected	
		1794-OB8EPXT	24Vdc Electronically Fused 8 2A Output Module, XTEMP (-20C to 70C)	
		1794-OB16	24Vdc 16 Source Output Module	
		1794-OB16D	24Vdc 16 Source Output Module, with Diagnostics	
		1794-OB16P	24Vdc 16 Source Output Module, Protected	
		1794-OB16PXT	24Vdc 16 Source Output Module, Protected, XTEMP (-20C to 70C)	
		1794-OB32P	24Vdc 32 Source Output Module, Protected	
		1794-OV32	24Vdc 32 Source Output Module	
		1794-OV16	24Vdc 16 Sink Output Module	
		1794-OV16P	24Vdc 16 Sink Output Module, Protected	
		48Vdc	1794-IC16	48Vdc 16 Sink Input Module
			1794-OC16	48Vdc 16 Source Output Module
		125Vdc	1794-IH16	125Vdc 16 Sink Input Module

	<b>Product</b>	<b>Catalog Number</b>	<b>Description</b>
<b>Analog I/O</b>  	24Vdc Analog Modules	1794-IE4XOE2	24Vdc 4 Input/2 Output Analog Combo Module
		1794-IE4XOE2XT	24Vdc 4 Input/2 Output Analog Combo Module, XTEMP (-20C to 70C)
		1794-IE8	24Vdc Selectable Analog 8 Input Module
		1794-IE8XT	24Vdc Selectable Analog 8 Input Module, XTEMP (-20C to 70C)
		1794-IE8H	24V dc Selectable Analog, 8 Input, with HART pass-thru
		1794-IE8XOE4	24Vdc 8 Input/4 Output Selectable Analog Module
		1794-IE12	24Vdc Selectable Analog 12 Input Module
		1794-OE4	24Vdc Selectable Analog 4 Output Module
		1794-OE4XT	24Vdc Selectable Analog 4 Output Module, XTEMP (-20C to 70C)
		1794-OE8H	24Vdc Selectable Analog 8 Output, with HART pass-thru
		1794-OE12	24Vdc Selectable Analog 12 Output Module
<b>Isolated Analog I/O</b>  	Analog Modules	1794-IF4I	24Vdc Source Isolated 4 Input Module
		1794-IF4IXT	24Vdc Source Isolated 4 Input Module, XTEMP (-20C to 70C)
		1794-IF2XOF2I	24Vdc 2 Input/2 Output Isolated Analog Combo Module
		1794-IF2XOF2IXT	24Vdc 2 Input/2 Output Isolated Analog Combo Module, XTEMP (-20C to 70C)
		1794-OF4I	24Vdc Source Isolated 4 Output Module
		1794-OF4IXT	24Vdc Source Isolated 4 Output Module, XTEMP (-20C to 70C)
		1794-IF8IH	FLEX Isolated HART Analog Input
		1794-OF8IH	FLEX Isolated HART Analog Output
<b>Relay Specialty I/O</b>  	Relay Module	1794-OW8	8 Isolated Relay Output Module
		1794-OW8XT	8 Channel Relay Output Module, XTEMP (-20C to 70C)
	Encoder Input Module	1794-ID2	24Vdc 2 Channel Incremental Encoder Input Module
	Frequency Input Module	1794-IJ2	24Vdc 2 Input Frequency Module
		1794-IJ2XT	2 Channel Counter Module, XTEMP (-20C to 70C)
	Pulse Counter Input Module	1794-IP4	24Vdc 4 Channel Pulse Counter Module
	RTD Input Module	1794-IR8	24Vdc RTD Input Module
	Thermocouple/RTD Input Module	1794-IRT8	24Vdc Thermocouple/RTD/mV Module
		1794-IRT8XT	24Vdc Thermocouple/RTD/mV Module, XTEMP (-20C to 70C)
	Thermocouple/mV Input Module	1794-IT8	24Vdc Thermocouple/mV Module
	Very High Speed Counter Module	1794-VHSC	24Vdc 4 Digital Output Module
<b>Power Supply</b>	Power Supply	1794-PS13	24Vdc, 1.3A
		1794-PS3	24Vdc, 3.0A

Product	Catalog Number	Description
Accessories	1794-CE1	Extender Cable, 0.3m (1 ft.)
	1794-CE3	Extender Cable, 0.9m (3 ft.)
	1794-CJC2	Cold Junction Compensator Kit
	1794-N2	FLEX Dummy Filler Module
	1794-NM1	Mounting Kit for panel mounting
	1794-LBL	Label Kit for terminal bases
	1492-EA35	DIN Rail Locks (for vertical mounting)
	eCADWorks (ABECAD) free at: <a href="http://www.rockwellautomation.com/en/e-tools/drawings.html">http://www.rockwellautomation.com/en/e-tools/drawings.html</a>	
Integrated Architecture Builder 4.0 free at: <a href="http://www.rockwellautomation.com/en/e-tools/configuration.html">http://www.rockwellautomation.com/en/e-tools/configuration.html</a>		
Product		
Certifications <sup>2</sup>	UL Listed Industrial Control Equipment	
	UL Listed for Class I, Division 2 Groups A, B, C, D Hazardous Locations	
	CE Marked for all applicable directives <sup>3</sup>	
	CSA Certified Process Control Equipment for Class I, Division 2 Group A, B, C, D Hazardous Locations	
	C-Tick Marked for all applicable acts	
	Marine Certification <sup>4</sup>	
SIL 2 Certification <sup>5</sup>		
XT Products	FLEX I/O conformal coated products meet or exceed the following standards:	
	ANSI / ISA-S71.04-1985, Class G1, G2, G3 environments	
	CEI IEC 6065A-4 Class 1 and 2 environments	
	UL 746E	
Publications	1794-SG002_-EN-P FLEX Selection Guide	
	ACIG-BR002_-EN-P Distributed I/O Products Brochure	
	1797-PP001H-EN-P Flex Ex I/O Product Profile	
	XT-PP001F-EN-E Extreme Environment System	
<sup>3</sup> CE Marking - Declaration of Conformity: <a href="http://www.rockwellautomation.com/products/certification/ce/index.html">http://www.rockwellautomation.com/products/certification/ce/index.html</a>		
<sup>4</sup> See the Certification for Marine and Off-shore Applications web site for details		
<sup>5</sup> See the SIL 2: <a href="http://www.rockwellautomation.com/products/certification/ce/index.html">http://www.rockwellautomation.com/products/certification/ce/index.html</a>		



## Encompass Partner Products

Company	Product	Description	Connectivity
ProSoft Technology, Inc.	"C" Programmable Solutions	"C" Programmable, Application Development and other application dependent interfaces available.	Backplane
ProSoft Technology, Inc.	FLEX-Communication Adapters 3170 Family	Allows Rockwell Automation FLEX I/O modules to interface to various protocols.	RS-232/422/485, Other Networks, Remote I/O
ProSoft Technology, Inc.	FLEX Communication Adapters MVI 94 Family	The FLEX communication modules are designed to connect the FLEX platform to any serial field device.	RS-232/422/485, Other Networks, Serial/DF1
Spectrum Controls Inc.	I/O Modules - Analog/Discrete		

For more information go to [www.rockwellautomation.com/encompass](http://www.rockwellautomation.com/encompass) and search for referenced products under the platform FLEX I/O.

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**[www.rockwellautomation.com](http://www.rockwellautomation.com)**

### Power, Control and Information Solutions Headquarters

Americas: Rockwell Automation, 1201 South Second Street, Milwaukee, WI 53204-2496 USA, Tel: (1) 414.382.2000, Fax: (1) 414.382.4444

Europe/Middle East/Africa: Rockwell Automation NV, Pegasus Park, De Kleetlaan 12a, 1831 Diegem, Belgium, Tel: (32) 2 663 0600, Fax: (32) 2 663 0640

Asia Pacific: Rockwell Automation, Level 14, Core F, Cyberport 3, 100 Cyberport Road, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846